[Geochemical Analysis & Lab]

EXPERIMENT 2: Concentrations and Errors

**Preparation**: Calculator, periodic table

**Concentrations:**

1. What is the molality and normality of Ca in the CaCO3 solution when 60mg of CaCO3 is dissolved in 1L solution? Assume complete dissolution of CaCO3. (Why not Ca2+ instead of just Ca?)
2. Represent the concentration of the dissolved Pb in mg/L when 2g of Pb dissolved in 500mL solution.
3. An analysis of 2g rock sample shows that it has 0.004mg Sr. What is the concentration of Sr in the rock in ppm?
4. If the concentration of Na in a solution is 1M, what is molarity of Na in the same solution? The density of the solution is 1.03g/L.
5. A rock has 0.02 w/w% Fe. Convert the concentration of Fe into ppm.
6. 3 moles of Na2CO3 is dissolved in a 1L solution. What are the molalities and normalities of Na and CO3?

**Errors:**

Youngsoo repeatedly analyzed Hwacheon granite and obtained SiO2 contents as below:

w/w% of SiO2: 65.2, 65.4, 64.9, 60.4, 65.1, 65.5.

1. What are the range and relative range of the data?
2. What is the standard deviation?
3. Can you see any value in doubt? If so, use Q-test to see whether you can discard that value (with 96% confidence level).
4. After the above test, report the SiO2 content with a confidence limit at 95% confidence level.

**Notes:**